

SPECIFICATION  
FOR THE  
REPLACEMENT OF AN INSULATING CAB GLASS PANE  
WITH A LAMINATED PANE  
AT THE  
AIRPORT TRAFFIC CONTROL TOWER  
CRAIG MUNICIPAL AIRPORT  
JACKSONVILLE, FL

1. GENERAL. This specification covers the Federal Aviation Administration's requirements for the replacement of a fogged tower cab insulated glass pane in the Air Traffic Control Tower (ATCT) at the Craig Municipal Airport in Jacksonville, FL.

2. DESCRIPTION. The work required by this specification includes, but is not limited to the following:

2.1. Existing Cab Glass. The cab window to be replaced is hermetically sealed, consisting of two panes; an outer pane 1/4" thick, and an inner pane, 1/4" thick. The two panes are separated by a sealed air space 1/2" thick, for a total thickness of 1" thick. The window is approximately 41.6 square feet in area, and is trapezoidal in shape. The greatest width is approximately 5'-10", and the smallest width is approximately 4'-8". The window height is approximately 7'-11", and the window is approximately 50' above ground. Exact field measurements by the contractor will be required since all given dimensions are approximations for bidding purposes, only.

2.2. New Cab Glass. The replacement unit is to be identical in shape and in square footage as the pane it is replacing. The overall thickness of the new window unit is thinner. The new cab glass window shall be composed of two laminated panes, each 0.25" thick, for a total thickness of 0.5". Refer to Section 6 for detailed glass requirements.

2.3. Framing. The new cab glass is thinner than the existing cab glass and will require new framing, which shall be fastened to the interior existing framing. Refer to Section 6 for detailed framing requirements.

2.4. Remove defective unit and replace with new cab window glass pane. The contractor must make sufficient measurements to determine the exact window size. The contractor must also determine the color and degree of tint, if any, in the outer panel and match it as closely as practical in the replacement unit.

2.5. Once started, the job is to be completed without interruption.

2.6. The contractor shall provide for covering the window area in the event of rain during installation.

2.7. After completion of the work the contractor shall remove the old glass from the premises and leave the area clean and neat, removing excess material and debris.

2.8. Working Hours. The contractor will restrict his activities on the site to the regular operating hours of the facility. Actual work on the cab window will be performed only during daylight hours and during periods of

predicted good (dry) weather. If a crane is used, the boom must be lowered at night.

3. SITE VISIT. All bidders are invited and are highly encouraged to visit the job site and acquaint themselves with the existing conditions prior to bidding. To arrange a site visit, contact Bill Buchanan, FAA SSC Manager, at (904) 741-0290.

4. WORK ACCESS. All work shall be coordinated with the Contracting Officer (CO). The work is located in an existing operating ATCT. Work will be scheduled and performed so as to not interfere with the operation of the facility and to cause the least interference to FAA personnel. The contractor will take precautions to protect FAA equipment from damage, dust and moisture as directed by the CO.

4.1. Workers. Due to security regulations, no foreign national workers will be allowed on the job site without 30 day notification and approval. Contact the SSC Manager for further information.

4.2. Compliance. All workers are required to comply with all current OSHA and Fall Protection Regulations. These specific items can be discussed at the preconstruction conference. Any worker found not in compliance will immediately be removed from the jobsite.

5. SPECIFICATIONS. All material shall adhere to the following:

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z97.1                Safety Glazing Materials Used in Buildings

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C669                Glazing Compounds for Back Bedding and Face Glazing of Metal Sash

ASTM C864                Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers

ASTM C920                Elastomeric Joint Sealants

ASTM C1036               Flat Glass

ASTM C1048               Heat Treated Flat Glass

ASTM C1172               Laminated Architectural Flat Glass

ASTM E163                Fire Tests of Window Assemblies

ASTM E774                Sealed Insulating Glass Units

CODE OF FEDERAL REGULATIONS (CFR)

16 CFR 1201               Safety Standard for Architectural Glazing Materials

FLAT GLASS MARKETING ASSOCIATION (FGMA)

FGMA GM                    Glazing Manual

FGMA SM                    Sealant Manual

MILITARY SPECIFICATIONS (MIL)

MIL-R-900                  Rubber Gasket Material, 45 Durometer Hardness

GLASS ASSOCIATION OF NORTH AMERICA (GANA)

GANA                        Laminated Glass Design Guide

GANA GM                    Glazing Manual

GANA SM                    Sealant Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80                     Fire Doors and Windows

SEALED INSULATING GLASS MANUFACTURERS ASSOCIATION (SIGMA)

SIGMA 73-8-2B              Chemical Effects of Glazing Compounds on Elastomeric Edge  
Seals

SIGMA A1202                Commercial Insulating Glass Dimensional Tolerances

SIGMA A3000                Vertical Field Glazing of Organically Sealed Insulating  
Glass Units

SIGMA TB-3001              Sloped Glazing

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B18.6.3                (1972; R 1991) Machine Screws and Machine Screw Nuts

ANSI B18.6.4                (1981; R 1991) Thread Forming and Threaded Cutting Tapping  
Screws and Metallic Drive Screws (Inch Series)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A39.1                 (1991) Safety Requirements For Window Cleaning

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 167                 (1994; Rev. A) Stainless and Heat-Resisting Chromium-Nickel  
Steel Plate, Sheet, and Strip

ASTM A 653/A 653M           (1994) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron  
Alloy-Coated (Galvannealed) by the Hot-Rolled Sheet and  
Strip Commercial Quality

ASTM A 569/A 569M           (1991; Rev. A, R 1993) Steel, Carbon (0.15 Maximum,  
Percent), Hot-Rolled Sheet and Strip Commercial Quality

## STEEL WINDOW INSTITUTE (SWI)

SWI SWS

(1990) Steel Window Specifications

6. PRODUCTS.6.1. Glass.

6.1.1. Glass Types. Glass thickness shown specified herein are minimums. Provide glass thickness to withstand all forces specified.

6.1.1.1. Type "T-1" (Control Cab Glass Unit). Fabricated from two pieces of designated thick (see Section 2.2) annealed float glass laminated together with a clear 0.090-inch thick clear polyvinyl butyral inner layer. The total thickness shall be nominally the same as the existing glass unit thickness, less the insulating space, if so existing. Both inner and outer lights shall be the highest quality (q3 or better) clear float glass. In addition to q3 Quality, maximum allowable blemishes for cab glass shall have no gaseous inclusions, knots, dirt, or stones. Visible transmittance shall be minimum of 73%. Visible reflectance shall not exceed 8 percent. The cab glass is not to be tempered or heat strengthened. Manufacturer to certify that glass can withstand windload pressure of: + 26lbs/sf; -40lbs/sf.

6.1.2. Setting Materials. Provide as specified in the GANA GM, SIGMA TM-3000, SIGMA TB-3001, and manufacturer's recommendations, unless specified otherwise herein. Do not use metal sash putty, nonskinning compounds, nonresilient preformed sealers, or impregnated preformed gaskets. Materials exposed to view and unpainted shall be gray or neutral color.

6.1.2.1. Glazing Compound. ASTM C 669. Use for face glazing metal sash. Do not use with insulating glass units or laminated glass

6.1.2.2. Elastomeric Sealant. ASTM C920, Type S or M, Grade NS, Class 12.5, Use G. Use for channel or stop glazing sash. Sealant shall be chemically compatible with setting blocks, edge blocks, and sealing tapes, with sealants used in manufacture of insulating glass units. Color of sealant shall be as selected.

6.1.2.3. Preformed Channels. Neoprene, vinyl, or rubber, as recommended by the glass manufacturer for the particular condition.

6.1.2.4. Sealing Tapes. Preformed, semisolid, polymeric-based material of proper size and compressibility for the particular condition. Use only where glazing rabbet is designed for tape and tape is recommended by the glass or sealant manufacturer. Provide spacer shims for use with compressible tapes. Tapes shall be chemically compatible with the product being set.

6.1.2.5. Setting Blocks and Edge Blocks. Lead or neoprene of 70 to 90 Shore "A" durometer hardness, chemically compatible with sealants used, and of sizes recommended by the glass manufacturer, in the following dimensions:

Length -3 to 8 inches as required by weight of the light

Width -Equal to glass unit thickness

6.1.2.6. Accessories. Provide as required for a complete installation, including glazing points, clips, shims, angles, beads, and spacer strips. Provide noncorroding metal accessories. Provide primer-sealers and cleaners as recommended by the glass and sealant manufacturers.

6.1.3. Submittals. No submittals are required for this project.

## 6.2. Framing Spacer.

6.2.1. Angle. 1/2" x 1/2" x 3/16" (approximate) metal angle as necessary to fill the interior gap, between the existing frame lip and the new glass. Framing angle shall adhere to ASTM 653 & ASTM 569 and shall be continuous and joint-free, except at corners.

6.2.2. Fasteners. Size: #8-32 x 1/2", stainless steel machine screw, with #8 stainless steel flat washer and lock washer, for fastening framing angle to existing frame.

## 7. INSTALLATION.

7.1. Preparation. Preparation, unless otherwise specified or approved, shall conform to applicable recommendations in the FGMA GM, FGMA SM, SIGMA A3000, and manufacturer's recommendations. Determine the sizes to provide the required edge clearances by measuring the actual opening to receive the glass. Grind smooth in the shop glass edges that will be exposed in finish work. Leave labels in place until the installation is approved, except remove applied labels on heat-absorbing glass and on insulating glass units as soon as glass is installed. Securely fix movable items or keep in a closed and locked position until glazing compound has thoroughly set.

7.2. Fabrication of Lights - General. Orient pattern and draw of glass pieces in the same direction.

7.3. Size. At dry glazing, provide clearance required by design of frame member but not less than 1/4 inch.

7.4. Gaskets and Seals. All gaskets (including structural glazing gaskets, if used), seals and sealant associated with the glass units being replaced or disturbed for any reason during this work will be replaced with new material of the same design as original. Gaskets, seals and sealant to be used in the work will be chemically compatible with each other, with all materials used in the replacement insulated glass units, and with all materials of the existing construction.

7.5. Framing Spacer. Framing spacer shall be manufactured per Section 6.2.1. and shall be installed in the gap created by the thinner window unit. The framing spacer shall be installed on all four sides of the interior edge of the glass, between the framing lip and the interior edge of the new pane, such that the new pane's exterior face is in the same location as the exterior face of the existing glass. Approximate gap to be filled is 0.5". The framing spacer shall be fastened by drilling and tapping for the #8 screws. Self-tapping screws are not acceptable. Install screws at 12" spacing.

7.6. Breakage. Replace glass and materials that become broken, chipped, cracked or damaged.

7.7. Weatherproof Tests. Test shall be made as follows on all exterior glazing, frames and storefront systems after installation is complete. There shall be no evidence of water leakage into the building under the following conditions: a standard garden hose, a nozzle and a minimum of 30 lbs. pressure on any parts of the assembly for five minutes.

7.8. Cleaning. After glass installation has been completed, clean and polish glass surfaces and also any setting molding and adjoining surfaces which become soiled as a result of glazing operation. Rerun glazing compound as necessary to leave job in first class condition.

## 8. QUALITY ASSURANCE.

8.1 Defects. Leaks and glazing material that cracks without evidence of surface impact shall be considered among defects to be corrected.

8.2 Standards. Unless they are modified or exceeded by the requirements of this specification, conform to the requirements of the Flat Glass Marketing Association Glazing Manual for fabrication and installation.

8.3 Quality. Surface scratches, improper cleaning of the interior surfaces or improper fit in existing opening shall be cause for rejection of any piece of glass.

8.4. WARRANTY. Warranty insulating glass units against development of material obstruction to vision (such as dust or film formation on the inner glass surfaces) caused by failure of the hermetic seal, other than through glass breakage, for a 5-year period following acceptance of the work. Provide new units for any units failing to comply with terms of this warranty within 45 working days after receipt of notice from the Government.